

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br>PCT/99-17   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/US00/01434  | International filing date (day/month/year)<br>21 JANUARY 2000   | Priority date (day/month/year)<br>08 FEBRUARY 1999 |
| International Patent Classification (IPC) or national classification and IPC<br>IPC(7): F04D 29/38 and US Cl.: 416/223R, 243 |   |  |
| Applicant<br>MIDWEST RESEARCH INSTITUTE  |   |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets.  
  
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|  |   |
|--|---|
| Date of submission of the demand<br><br>31 AUGUST 2000   | Date of completion of this report<br><br>29 DECEMBER 2000               |
| Name and mailing address of the IPEA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231 | Authorized officer<br><i>Christopher Verdier</i><br>CHRISTOPHER VERDIER |
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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/01434

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
pages 1-10, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of
- ☒ the claims:  
pages 11-14, as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages NONE, filed with the demand  
pages NONE, filed with the letter of
- ☒ the drawings:  
pages 1, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of
- ☒ the sequence listing part of the description:  
pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig. NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/01454

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

|                               |                    |     |
|-------------------------------|--------------------|-----|
| Novelty (N)                   | Claims <u>1-10</u> | YES |
|                               | Claims <u>NONE</u> | NO  |
| Inventive Step (IS)           | Claims <u>1-10</u> | YES |
|                               | Claims <u>NONE</u> | NO  |
| Industrial Applicability (IA) | Claims <u>1-10</u> | YES |
|                               | Claims <u>NONE</u> | NO  |

**2. citations and explanations (Rule 70.7)**

Claims 1-4 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest a family of airfoils for a blade having a root region and a tip region, with an airfoil in the root region of the blade having a Reynold's number of 500,000 and an airfoil in the tip region of the blade having a Reynold's number of 1,000,000.

Claims 5-6 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest an airfoil for a blade having a root region with a cross sectional shape having a thickness of about 14 percent chord and a maximum lift coefficient of about 1.5, and a Reynold's number of 500,000.

Claim 7 meets the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest an airfoil having a root region with an upper surface and a lower surface and a blade chord line with  $x/c$  values being dimensionless locations along the blade chord line and  $y/c$  values being dimensionless heights from the chord line to points on the upper surface or lower surface as set forth in claim 7.

Claims 8-9 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest an airfoil for a blade having a tip region having a cross sectional shape having a thickness of about 10 percent chord and a maximum lift coefficient of about 1.5 and a Reynold's number of 1,000,000.

Claim 10 meets the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest an airfoil having a tip region with an upper surface and a lower surface and a blade chord line with  $x/c$  values being dimensionless locations along the blade chord line and  $y/c$  values being dimensionless heights from the chord line to points on the upper surface or lower surface as set forth in claim 10.

----- NEW CITATIONS -----  
NONE